

REDUCED THICKNESS VARIATION IN A MATERIAL LAYER DEPOSITED IN
NARROW AND WIDE TRENCHES

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ABSTRACT

10 A high density plasma chemical vapor deposition (HDP-
CVD) process is used to deposit silicon dioxide in trenches
of various widths. The thickness of the silicon dioxide
filling both narrow and wide trenches is made more uniform by
reducing an HDP-CVD etch to deposition ratio. The lowered
etch to deposition ratio is achieved by lowering a ratio of
oxygen to silane gas, by lowering the power of a high
frequency bias signal, and by lowering the total gas flow
15 rate.